

SECTION I

Form Approved
Budget Bureau No. 68-R0DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

GRANT APPLICATION

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TYPE	PROGRAM	NUMBER
REVIEW GROUP		FORMERLY
COUNCIL (Month, Year)		DATE RECEIVED

TO BE COMPLETED BY PRINCIPAL INVESTIGATOR (Items 1 through 7 and 15A)

1. TITLE OF PROPOSAL (Do not exceed 63 typewriter spaces)

Resource Related Research - Computers and Chemistry

(RR-00612 renewal)

2. PRINCIPAL INVESTIGATOR

2A. NAME (Last, First, Initial)

Lederberg, Joshua

2B. TITLE OF POSITION

Professor and Chairman

2C. MAILING ADDRESS (Street, City, State, Zip Code)

Department of Genetics
Stanford University Medical Center
Stanford, California 94305

3. DATES OF ENTIRE PROPOSED PROJECT PERIOD (This applica

FROM

5/1/74

THROUGH

4/30/77

4. TOTAL DIRECT COSTS RE-
QUESTED FOR PERIOD IN
ITEM 3.

\$1,639,456

5. DIRECT COSTS REQUESTED
FOR FIRST 12-MONTH PERIOD

\$488,267

6. PERFORMANCE SITE(S) (See Instructions)

Department of Genetics
Department of Chemistry, and
Department of Computer Science
Stanford University

2D. DEGREE

Ph.D.

2E. SOCIAL SECURITY NO.

2F. TELE- PHONE DATA	Area Code	TELEPHONE NUMBER	EXTENSION
	415	321-1200	Ext. 5801

2G. DEPARTMENT, SERVICE, LABORATORY OR EQUIVALENT
(See Instructions)

Department of Genetics

2H. MAJOR SUBDIVISION (See Instructions)

School of Medicine

7. Research Involving Human Subjects (See Instructions)

A. ☐ NO B. ☐ YES Approved: _____C. ☒ YES - Pending Review

Date

8. Inventions (Renewal Applicants Only - See Instructions)

A. ☒ NO B. ☐ YES - Not previously reportedC. ☐ YES - Previously reported

TO BE COMPLETED BY RESPONSIBLE ADMINISTRATIVE AUTHORITY (Items 8 through 13 and 15B)

9. APPLICANT ORGANIZATION(S) (See Instructions)

Stanford University
Stanford, California 94305
IRS No. 94-1156365
Congressional District No. 17

11. TYPE OF ORGANIZATION (Check applicable item)

☐ FEDERAL ☐ STATE ☐ LOCAL ☒ OTHER (Specify)
Private, non-profit University
12. NAME, TITLE, ADDRESS, AND TELEPHONE NUMBER OF
OFFICIAL IN BUSINESS OFFICE WHO SHOULD ALSO BE
NOTIFIED IF AN AWARD IS MADEK. D. Creighton
Deputy Vice Pres. for Business and Finance
Stanford University
Stanford, California 94305

Telephone Number (415) 321-2300 X21

10. NAME, TITLE, AND TELEPHONE NUMBER OF OFFICIAL(S)
SIGNING FOR APPLICANT ORGANIZATION(S)

c/o Sponsored Projects Office

Telephone Number (s) (415) 321-2300 X2883

13. IDENTIFY ORGANIZATIONAL COMPONENT TO RECEIVE CREDIT
FOR INSTITUTIONAL GRANT PURPOSES (See Instructions)

01 School of Medicine

14. ENTITY NUMBER (Formerly PHS Account Number)

458210

15. CERTIFICATION AND ACCEPTANCE. We, the undersigned, certify that the statements herein are true and complete to the best of our knowledge and accept, as to any grant awarded, the obligation to comply with Public Health Service terms and conditions in effect at the time of the award.

SIGNATURES

(Signatures required on
original copy only.
Use ink, "Per" signatures
not acceptable)

A. SIGNATURE OF PERSON NAMED IN ITEM 2A

B. SIGNATURE(S) OF PERSON(S) NAMED IN ITEM 10

DATE
APR 26 1973

DATE

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

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PROJECT NUMBER

RESEARCH OBJECTIVES

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Stanford University, Stanford, California 94305

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Lederberg, Joshua,	[REDACTED]	Professor of Genetics, Department of Genetics
Djerassi, Carl,	[REDACTED]	Professor of Chemistry, Department of Chemistry
Feigenbaum, Edward,	[REDACTED]	Professor of Computer Science, Dept. of Computer Sci
Buchanan, Bruce,	[REDACTED]	Research Computer Scientist, Dept. of Computer Scien
Duffield, Alan,	[REDACTED]	Research Associate, Department of Genetics
Pereira, Wilfred,	[REDACTED]	Research Associate, Department of Genetics
Rindfleisch, Thomas	[REDACTED]	Research Associate, Department of Genetics
Smith, Dennis,	[REDACTED]	Research Associate, Department of Chemistry
Sridharan, Natesa,	0	Research Associate, Department of Computer Science
Hammerum, Steen	0	Research Associate, Department of Chemistry

TITLE OF PROJECT

Resource Related Research - Computers and Chemistry

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The objectives of this research program are the development of innovative computer and biochemical analysis techniques for application in medical research and closely related aspects of investigative patient care. We will apply the unique analytical capabilities of gas chromatography/mass spectrometry (GC/MS) and Carbon(13) Nuclear Magnetic Resonance Spectrometry (CMR) with the assistance of data interpreting computer programs utilizing artificial intelligence techniques, to investigate the chemical constituents of human body fluids in a variety of clinical contexts. Specific subtasks of this program include; 1) the application of artificial intelligence techniques to programs capable of interpreting mass spectra from basic principles as well as extending mass spectral theory by analysis of solved spectrum-structure examples, 2) the extension of GC/MS data systems incorporating an increasing level of automation and allowing the directed collection of specialized information, 3) the application of GC/MS techniques to analyze body fluids such as urine and blood, and to relate detected metabolic abnormalities to clinically observable disease states, and 4) the application of CMR techniques to assist in the determination of chemical structure.

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The undersigned agrees to accept responsibility for the scientific and technical conduct of this project and for provision of required progress reports if a grant is awarded as the result of this application.

APR 26 1973

Date

Joshua Lederberg
Joshua Lederberg
Principal Investigator

RESOURCE-RELATED RESEARCH: COMPUTERS AND CHEMISTRY

(RR-00612 - Renewal Application)

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